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FULL-LENGTH ARTICLES

Combining Participatory-Action-Research With Single-Case-Experimental-Designs: A New Promise for a Mixed-Methods Approach

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Evidence-based practice involves using clinical reasoning to integrate information from four sources: research evidence, the expertise of the clinician, the client's values and perspectives, and the practice context. As such, research conducted to inform practice should adopt processes to collect data to inform all four sources. In this paper, we propose an approach to do so, which combines the qualitative Participatory-Action-Research approach - which privileges community voices - with a quantitative Single-Case-Experimental-Design approach - which systematically captures individual differences and change over time. Since both focus on individual change, both hold promise for a new complementary mixed-methods approach for clinical practice. A critical analysis of our own paediatric Single-Case-Experimental-Design study (Calder et al., 2020), including reflections on how Participatory-Action-Research principles could have been implemented from the start, leads into key recommendations about how community perspectives can be meaningfully integrated into clinical practice.

Introduction

In the field of speech-language pathology, where research and clinical practice explore human behavior and our understanding of the needs of people with communication difficulties, the contribution of qualitative research methodologies is acknowledged (Hersh et al., 2022). Researchers are increasingly asking questions directly relevant to stakeholders which seek outcomes that will be functional and meaningful and aim to develop a better understanding of the views and experiences of participants and clients. Qualitative approaches such as participatory action research (PAR) are still under-utilised in the speech, language and hearing sciences (see Connery & Salsberg, 2024) despite slow but steady developments that show an increase in the use of mixed methods studies that include methodologies such as PAR (e.g., Cornwell & Jewkes, 1995) in combination with quantitative methodologies to facilitate a greater understanding of the participants' and clients' shared experiences (e.g., Holt & Asagbra, 2021). However, combining a qualitative approach with a quantitative approach is not guaranteed to capture the voice of the community of individuals, their family, and other key stakeholders from the start of a study. Most quantitative research approaches leave out the voices of stakeholders, so we have chosen to focus on a specific

quantitative approach that is particularly interested in inter-individual differences: the experimental quantitative single case design (SCED, e.g., Morley, 2018). Combining SCED with PAR can be useful to promote community voices from the conception of the research question, the appropriate research design to the choice of materials in an intervention and the communication format of results and recommendations to clients and family members. While PAR (e.g., Cornwell & Jewkes, 1995) is characterised by a commitment to collaborate with community from the start of a research process bridging the gap between research and practice by involving researchers, health practitioners, clinicians, and service users (clients) in co-design, co-evaluation, and co-adaption (e.g., see Koch et al.'s, 2005 "change process") , SCED (e.g., Morley, 2018) is characterised by tracking an individual's change process over time using treated and untreated conditions as a comparison to the individual's own baseline.

While the above argument seems straightforward, the PAR-SCED combination has rarely been used in the international research context of speech-language- and communication pathology. A search between 2015 and 2025 in PubMed and PsychInfo including the following search terms and logic ((participatory action research[Title/Abstract]) AND (single case design[Title/Abstract])) identified zero publications. Despite a move towards combining quantitative research methods with qualitative more broadly, no study in the field of speech and language therapy combined a quantitative single case experimental design, with a participatory action design. Given the increasing emphasis on the need to promote the voices of the community and clients more strongly from the very start of the research process, this paper suggests a new way forward in how to combine PAR with SCEDs.

In Part I of this paper, we outline a mixed-methods approach, bringing together a qualitative PAR (e.g., Cornwell & Jewkes, 1995; Khanlou & Peter, 2005; Pyett, 2002; Springett et al., 2011; Wallerstein & Duran, 2010) and a quantitative SCED approach (e.g., Barlow & Nock, 2009; Howard et al., 2015; Matthews et al., 1990; Normand, 2016). Since different quantitative SCED exist, and these are often confused with non-experimental qualitative case studies (e.g., Swanborne, 2010; Yin, 2017), we also provide a brief overview of the differences. While PAR is chiefly found in the health service provider domain, with increasing numbers of health services designing measures using a co-design process with their communities (e.g., see the Western Australian Council of Social Service 2017 Co-Design ToolKit), SCEDs are more traditionally used in a clinical setting (e.g., one-on-one client-clinician context).

In Part II, we undertake a demonstration on how PAR could enrich a SCED, drawing on an existing intervention study (Calder et al., 2020). By taking the reader through a reflection exercise, we demonstrate our novel mixed-method approach to an already conducted intervention study, by capturing inter-individual differences across a group of children with developmental language disorder, while tracking their individual learning over

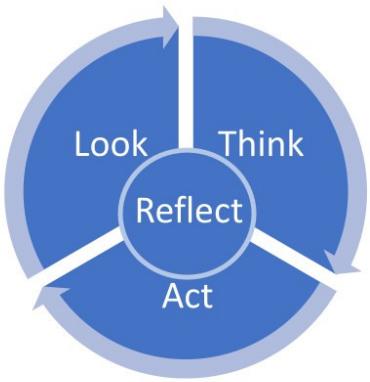

Figure 1. Iterative PAR cycle (adapted from Koch et al., 2005)

time in different domains (e.g., past tense forms – trained and untrained sets, and several non-tense control sets). While this intervention study was published in 2020 by two co-authors on this paper without consideration of PAR, we were interested in reflecting retrospectively on how this study could have benefitted from an incorporated PAR approach and how it could be extended in the future. The PAR approach could inform the concepts that need to be developed into measures of change (e.g., the client expresses their intervention goal to be to work on their grammatical difficulties), while the SCED would be used to capture these measures repeatedly over set time points within each individual (e.g., to create sets of words that use specific grammatical markers, some sets being trained and some untrained).

Finally, we will reflect on how the inclusion of a PAR approach can benefit any quantitative intervention approach (Part III), adding to the debate in the current speech-and language pathology landscape to re-think assessment and intervention, and inform evidence-based practice (e.g., Hersh & Boud, 2023; Nair et al., 2023).

PART I: Complementary *and* overlapping nature of PAR and SCED

Participatory-Action-Research (PAR)

A multitude of participatory research approaches exist that engage people with lived experience as partners into the research process, and that prioritize empowerment, social justice, and change. We draw attention to PAR's cyclical, iterative process, which is represented throughout the literature in a range of ways. While Ammentorp et al. (2018) describe it as a cycle of action and reflection, Whitehead et al. (2003) break it down into three or more phases depending on the complexity of the issue. This cyclic, iterative process could be depicted as a spiral or circle. Based on Koch et al. (2005), who label this cyclic and iterative process as a 'look-think-act-reflect' iteration, we created Figure 1 with the 'reflect' component overlapping across the 'look-think-act' phases.

Table 1 below defines each phase in more detail and complements Figure 1 that depicts the flow process.

Table 1. Phases in a Participatory Action Research (PAR) Cycle (adapted from Koch et al., 2005)

PAR Cycle Phase	Description	Key Activities	Stakeholder Involvement	Evidence Considered
Look	Initial phase where stakeholders define the goals and tasks for addressing a problem	Define goals, value lived experiences, explain scientific evidence, build relationship	Researchers, speech pathologists, clients, carers share perspectives and successful strategies to change	Lived experience, scientific evidence around the presented problem
Think	Building on trust, this phase examines themes from personal and empirical evidence to design actions	Examine evidence, negotiate shared language, generate and discuss potential actions, build trust	Discussion of actions and success indicators, with consideration of both clinical protocols and personal qualitative measures being meaningful to clients and carers	Personal evidence (lived experience), empirical scientific evidence
Act	Implementation phase where agreed-upon actions are promoted in the real world	Implement change, collect data on quantitative and qualitative aspects of implementation	All parties agree on implementation methods and measures to use	Quantitative (frequency, scores) and qualitative (reflections on process) data
Reflect	Evaluation phase that occurs within each phase and overlaps across all phases; a two-step process of assessing outcomes and critical reflections of all stakeholders	Evaluate intervention impact, reflect on personal transformations and changes in practice environment	Critical reflections of all stakeholders on personal and practice environment changes	Outcomes from the intervention, personal transformation, practice environment changes

Discussions about how to disseminate or share findings can begin in the first 'look' phase and be revisited as results are analyzed ('think', 'reflect'). Each stakeholder has the responsibility to take back findings ('act') to their community (e.g., a person with post-stroke aphasia shares their experience and the outcome in their support group; or a speech pathologist shares their experience with their clinical team). This produces ripple effects of transformation for each stakeholder's community (e.g., Trickett & Beehler, 2017). Practitioners introduce what they have learned to their peers, who interact with similar client groups. Clients and their families may have ways, or may wish to establish ways, of conveying their experience with the process to others with similar needs. The researchers use the opportunities and learning being offered in these relationships to influence both the research community and the health sectors more widely ('reflect'). These ideal ripple effects describe a true bottom-up approach.

Rigor and Goals of PAR designs

Where quantitative studies measure their evidential credibility in terms of objectivity, reliability and validity, methods such as PAR emphasize the complexity and multiple views of lived experience (Hesse-Biber, 2020, p. 153). An important indicator of rigor is the *depth of participation* within a PAR project (e.g., Wallerstein & Duran, 2010), which can be recognized by understanding (i) where control of the project lies, (ii) whose knowledge is valued, and (iii) whose priorities are paramount. At each step of the cycle, it is important to reflect on: (i) whether there are any views that are not being

heard, (ii) how the members of the group feel about the relevance of the process, and (iv) how they would explain it to their peers (e.g., Chambers, 1998).

PAR privileges the voices that are less heard and anchors itself in the lived experience of everyday life by capturing "narrative accounts of the local situation, local stories" (Springett et al., 2011, p. 10) at the beginning of a project. This gives the potential to generate relevant and meaningful interventions. While randomized control trials (RCTs) are considered the 'gold standard' in medical research with their results seen as generally applicable across the population (end goal: a *standardized clinical protocol)*, PAR studies pay attention to what is *specific* in a context and are interested in how a particular population *differs* from the average. This is a trait that PAR shares with the SCEDs as outlined below. How a solution developed in one context can still be relevant for another context is a challenge that any PAR study needs to address. However, Koch et al.'s iterative 'look-think-act-reflect' cycle allows actions to be modified in response to changes in or feedback from the community context. While PAR results cannot be generalised to other contexts, they can give important cues when exploring other contexts. However, there are critical questions that PAR cannot answer, which are acknowledged below:

- Can a local context ever generalize to another local context, if the core of the PAR endeavour is to carve out unique circumstances?
- Can an intervention that is applied in one context work in another?

By acknowledging those difficulties, one way forward could be to complement PAR with a quantitative SCED approach. In fact, Springett et al. (2011) proposed such an approach, despite not specifically mentioning SCEDs:

> Transfer of interventions from one locality to the next is about understanding the contextual conditions in the new setting, how they differ from the setting in which the knowledge was produced and reflecting on the consequences. [...]. One possible way forward is to think of each local PAR project as a case study; scaling up is then about a broad analysis of a range of case studies with the goal of identifying general patterns and theories while recognizing the uniqueness of place. (p. 10)

The quote by Springett et al. prompted us to explore the possibility of combining PAR with the specific SCED approach. Two reasons motivated us: Firstly, the overlap in goals of PAR and SCED that align. Both approaches aim to track a change process over time for an individual rather than averaging across group(s). The focus lies in what is different in/ across

population(s). Secondly, the risk of potential misunderstandings that may arise when using the term 'case study' and 'range of case studies'. In the above quote, Springett et al. refer to a 'case study', however, it remains unspecified whether the 'case' is attached to a qualitative case (e.g., a descriptive case study), or a quantitative single case design. Hence, it is necessary to first define the different types of quantitative SCEDs and contrast them with qualitative case designs. Only after these concepts have been disentangled and understood, can they then be confidently combined with PAR. As we will attempt to show, there are also parallels between many of these PAR principles and best practice in the SCED approach (e.g., the latter approach uses repeated measuring points that indicate cyclic and iterative processes). Therefore, the cyclical and iterative processes are key features and a strength of both approaches.

Single Case Designs

Single case designs can be classified as both qualitative and quantitative. Qualitative approaches include *Case Study Research/Single Case in a Qualitative Observational Context designs (e.g.,* Onghena et al., 2019; Pearson et al., 2005). Quantitative approaches include designs such as *Quantitative Observational Single Case Research (*Johnston & Johnston, 2013; McDonald et al., 2017) and *General Quantitative Single Case Experimental Designs* (Howard et al., 2015; Nickels et al., 2010, 2023; Tate et al., 2016). To understand the nuances of, and the differences between, different designs, we provide an overview of the different qualitative and quantitative single case design types including associated key reference (see Table 2). This tabled overview underpins the SCED definitions and design types we draw upon in Part II. Part II then combines a PAR and SCED approach to a new approach which we introduce as PARSCED.

For an illustration of a SCED, see Figure 2 as an example from our study that captures the *multiple baseline design within-participant across-behaviors* including a control task (2b subtype) (e.g., Howard et al., 2015; Morley, 2018). This graph demonstrates that the key characteristic of the multiple baseline design within-participants across-behavior is the staggered introduction of the task assessments prior to intervention of only one goal (during intervention). This means that task 1 is introduced at baseline 1 (e.g., spoken production of trained past tense verbs), task 2 at baseline 2 (e.g., spoken production of untrained past tense verbs) while task 1 is re-tested e.g., (e.g., spoken production of trained past tense verbs). Task 3 – the control task- (e.g., spoken production of possessive -s) is then introduced at baseline 3, while tasks 1 (e.g., spoken production of trained past tense verbs) and task 2 (e.g., spoken production of untrained past tense verbs) are re-tested. If there is more than one participant, tasks can be administered in random order, for example, task 3 (possessive s) at baseline 1, and task 1 (spoken production of trained past tense verbs) at baseline 2, etc.

Table 2. Key Differences of Single Case Design Types

Design Type	Approach	Focus	Advantage	Key References
Qualitative Observational Context	Descriptive narrative and analyses	Addresses research questions that focus on client's or community's processes, their feasibility of such processes, and appropriateness	Captures clinical description of unfamiliar situation; puts "narrative flesh on the bones of the experimental and statistical analysis"	Onghena et al., 2019; Pearson et al., 2005
Quantitative Observational SCR	Correlational and regression analyses	Tracking health behavior over time; repeated measurements of variables (observing behavior and predictors) without manipulation	Individual-level theory testing, personalized intervention development	Johnston & Johnston, 2013; McDonald et al., 2017
General Quantitative Single Case Experimental SCED	Repeated measures of change variable, control variable(s) predicted not to change	Intervention-specific changes; changes due to generalisation (predicted vs unpredicted); individual serves as their own control; observations of interindividual differences key (no interest in averaged group behavior)	High internal validity, works with detailed cognitive models, can capture heterogeneous impairments by viewing each case like a separate experiment that requires a separate test for its cognitive theory	Howard et al., 2015; Morley, 2018; Nickels et al., 2010, 2023; Tate et al., 2016
SCED Subtype 1: Pre-and Post-design (AB design)	Single phase comparison	Pre- and post-intervention performance comparison of change and control variables	Pre-experimental design, basis for more complex designs, used in pilot studies	Morley, 2018
SCED Subtype 2: Multiple Baseline Designs	Multiple phase comparison, staggered introduction of change variable to different participants	Differentiating true intervention effects from external factors	Enhanced robustness, high internal and external validity	Howard et al., 2015; Nickels et al., 2010; Tate et al., 2016
Subtype 2a: *Multiple baseline design across participants within one behavior*	Repeated baseline and repeated post-testing (ABA design), participants may start with staggered baseline, but all received same intervention measuring same behavior	Minimum of two baseline and post tests, focus is on one change variable over time across more than one participant.	Enhanced robustness of change measure observed across different participants, addresses threats to internal validity, such as maturation	Morley, 2018
Subtype 2b: *Multiple baseline design within participant across behaviors including a control task*	Repeated baseline and repeated post-testing (ABA design) on several behavioral measures within one participant	Task repertoire: Task 1 directly trained (change expected), task 2 indirectly trained (generalisation expected), task 3 unrelated not trained (no change expected)	Addresses threats to internal validity, such as practice effects by including a control task. If performance on control task stays at baseline performance, but trained and related task improve, indication of true intervention effect. If changes confirmed by time-series analyses and effect size measures based on item power, internal validity high	Howard et al., 2015; Morley, 2018
Subtype 2c:	Repeated baseline and repeated	Explores external factor 'setting', ensures	If performance across settings remains the	Morley, 2018

Design Type	Approach	Focus	Advantage	Key References
Multiple baseline design within participant across different settings	post-testing (ABA design) on one behavior within one participant but across different settings	excluded as influence for intervention effect	same, indication for high internal validity since external setting not influential	

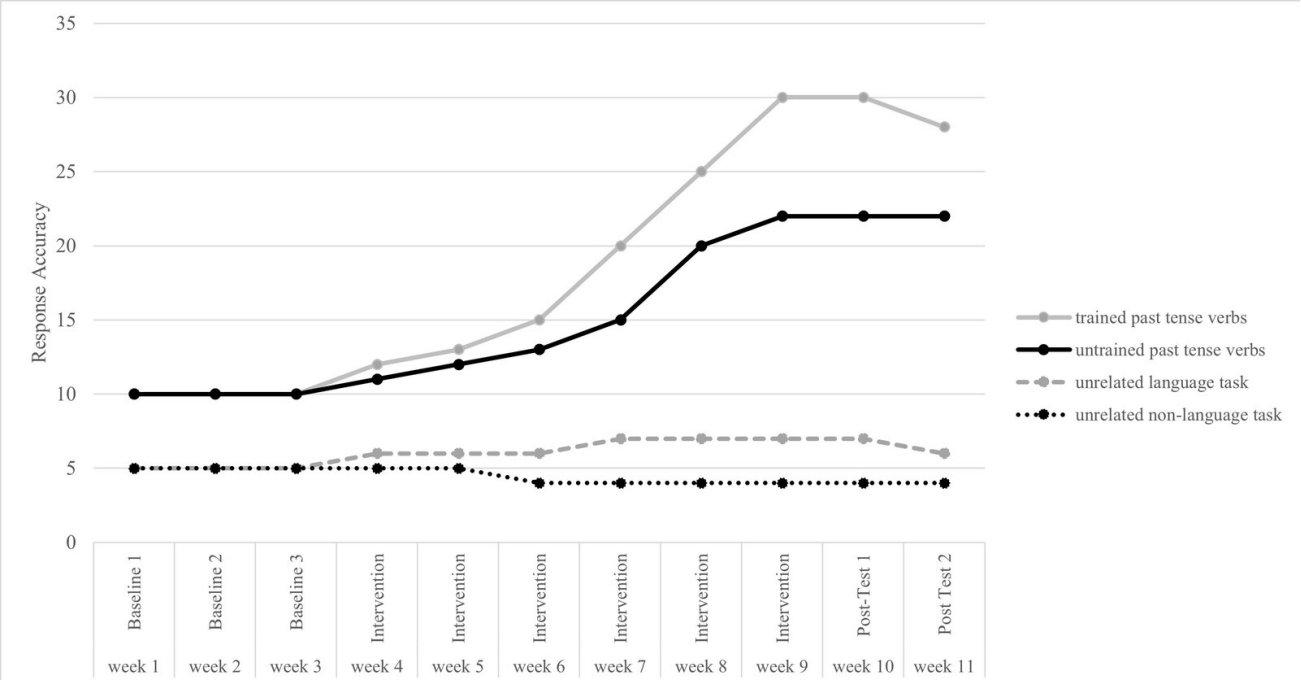

Figure 2. Predicted intervention trajectory within a participant across several tasks including a control task (based on Howard et al., 2015)

As described above, the participant(s) are ideally all treated in the same environment, across the same time frame and are following a transparent intervention protocol. This is particularly important when more than one clinician is carrying out the intervention to control for investigator bias. In cases of more than one participant, participant performance will not be averaged across, but will be treated as individual performance, in other words, a case series SCED is applied (e.g., Morley, 2018, see across-participants within-behavior design).

The purpose of our overview of both approaches above was to highlight the complementary *and* the overlapping nature of both. While the strength of the SCED is to capture the individual's change in a time series design (with multiple, repeated [iterative] testing points) with each individual serving as their own control, PAR consists of an iterative 'look-think-act-reflect' cycle allowing actions to be modified in response to changes that emerged in this feedback cycle with individuals from a certain community. Both SCED and PAR can capture 'outlier' behavior, in contrast to a Randomised Control Trial (RCT) which captures averaged behavior across all individuals in one group. While SCED takes a quantitative approach, PAR takes a qualitative approach to capture and actively prioritize the specific individual needs of the client and their community in a given context, especially when those needs differ from the dominant population.

In sum, common key points of SCED and PAR are their interest in inter-individual differences. Hence, both approaches take a genuine interest in the different 'qualities' of each individual with no urge to homogenize.

In the next section, we propose a new way to apply PAR principles post-hoc to a SCED study, that was published by two of the co-authors on this paper. The demonstration of our proposed mixed-methods approach (the PARSCED) to our own published work (Calder et al., 2020) provides an opportunity to critically reflect on what could have been done better, and to consider some practical solutions for future directions. Our paper is a starting point to raise awareness for a more inclusive involvement of community (e.g., clients with language difficulties, their relatives, clinicians) in research decisions right from the start, beginning with the research questions and the design phase.

PART II: Combining PAR with SCED (PARSCED)

Evaluation of a Theoretically Motivated Past Tense (-ED) Intervention (TheMEDI)

We illustrate with an example of PARSCED from Calder et al. (2020; Calder, Claessen, Leitão, et al., 2021a), who conducted an efficacy study evaluating an explicit intervention to improve past tense production (TheMEDI) for children with developmental language disorder (DLD)[1] . The study was an ABA across-participant across-behavior multiple baseline design. Participants included n = 9 children aged between 5;10 – 6;8 years, who attended a specialized school for children with developmental language disorder. Repeated measures included the target behavior (trained past tense verbs), a generalization probe (untrained past tense verbs), and a behavioral control (possessive 's). The intervention was delivered twice per week in 20–30-minute sessions by a speech pathologist/researcher (author SC) and combined metalinguistic training with visual supports (the SHAPE CODING system, Ebbels, 2007) with a systematic cueing hierarchy (Smith-Lock et al., 2015). Results were analyzed statistically using Tau-U which combines non-overlap and trend of data across baseline and intervention phases (Parker et al., 2011). This statistical approach also allows the aggregation of individual results to yield an effect size across grouped participants, which is interpreted as small (>0.20), moderate (0.20-0.60) and large (0.60-0.80) (Vannest & Ninci, 2015).

Of the nine participants, eight made significant improvement on trained verbs with large effects (Tau = 0.83-0.88), and seven improved on untrained verbs with moderate-large effects (Tau = 0.64). Results on the control measure were non-significant and small (Tau = 0.10). Overall, the findings of this study indicated that TheMEDI delivered by a single speech pathologist/researcher was efficacious for improving past tense production of trained and untrained verbs for most of the children who participated. The intervention

1 While we acknowledge the term "Developmental Language Disorder" reflects deficit focused language, we have elected to keep this term due to consensus efforts to use this term, which included input from those with lived experience of the condition (see the CATALISE statement: Bishop et al., 2017). A related paper explaining this terminology is Hobson et al. (2024).

procedures for TheMEDI were reported in detail and summarized as ten steps including a timing breakdown (Calder et al., 2020, p. 315, their Appendix A). In fact, the design of TheMEDI was firmly contextualised by clinical practice as indicated by a survey of clinicians (Finestack & Satterlund, 2018), that indicated between 60% and 70% of respondents used explicit instruction as an approach, and between 40% and 60% of practitioners targeted regular past tense in early and elementary education, respectively. TheMEDI has since been manualized and framed within the 'Template for Intervention Description and Replication' (TIDieR; Hoffmann et al., 2014), see Calder, Claessen, Ebbels, et al., 2021, Supplemental Material S5). The manual is freely available for download (Calder, Claessen, Leitão, et al., 2021b). However, the design and implementation of TheMEDI was informed only by the experiences of the research team and their knowledge of the literature on morphosyntactic interventions for DLD.

Best et al. (2019) and Nickels et al. (2023) discuss how robust SCEDs should be considered equally valuable as evidence to inform practice by developing theories of intervention through in-depth investigation of the individual. A programme of research to extend the understanding of and inform the effectiveness of TheMEDI with individuals can be achieved through application of PAR and the 'look-think-act-reflect' cycle.

Critical Analysis and Reflections on how PAR can Complement SCED

The cycle could begin by establishing *community forums* of expert stakeholders to inform the design of future SCEDs to continue evaluating the effectiveness of TheMEDI. This reference group may include clients (children with developmental language disorder [DLD] whom TheMEDI was designed for, including their guardians and their clinicians), who may inform the intervention. Initial members may propose expanding the community forum to include other interested parties to contribute to the co-design process to inform future evaluation, such as educators, who teach children with DLD in their classrooms. The role of this community forum of expert stakeholders is not to directly evaluate the intervention, but rather to offer their perspectives to components of the research design and program, that are pertinent to be explored through SCED methodologies. Providing information about TheMEDI to the stakeholders and what the intervention hopes to achieve, may dispel fears, and promote engagement.

The Look Process

The 'Look' process serves to promote open listening without agenda and awareness of the power researchers hold when initiating the iterative cycle. From the outset, the language of evaluating an *intervention* may be perceived by clients and guardians as medical and deficit focussed. Further, although repeated measures are fundamental to demonstrating a functional relationship between intervention and outcomes, this typically necessitates a hyper-operationalized dependent variable to increase the likelihood of precision estimates in changes to observed behaviors resulting from

intervention as the independent variable. While the narrowness of these repeated measures as primary outcomes is noted as a limitation by Calder et al. (2020), PAR could drive co-design of SCED methodologies which account for the desired functional improvement of TheMEDI from the perspective of clients and their guardians. For example, tense related morphology, such as past tense, is critical for indicating the temporal links in spoken language, and thus the impact of function may be captured by recounts of events of the day or recalling information from a favourite story or film.

Additionally, clinicians for whom the tool was designed, may view published research as a barrier to practice. For example, Ludemann et al. (2017) found that there is a lack of sufficiently reported intervention procedures to facilitate replication by clinicians in RCTs throughout speech pathology literature. While the survey of clinical practice indicated that the use of explicit approaches to grammar interventions is widespread (Finestack & Satterlund, 2018), the evidence supporting their use is still emerging (Balthazar et al., 2020; Ebbels, 2014) creating further barriers to implementing evidence-informed practices.

The Think and Act Processes

The 'Think' process serves to facilitate a democratic decision between parties to inform the 'Act' process in which all parties have agreed on how best to implement the desired change, for example, the perspectives of stakeholders with lived experience of the condition. This may suggest a move from a term such as *intervention* to more inclusive, neutral language, such as *change process*. While we also acknowledge that the term Developmental Language *Disorder* is inherently deficit-focused language, there is a rationale for maintaining this terminology. Hobson et al. (2024) proposed DLD should indeed be considered from a neurodiversity informed perspective, suggesting that this terminology is critical for diagnostic practices and to raise awareness and understanding in mental health, education, and employment sectors. Further, as noted by Calder et al. (2020), future SCEDs could include naturalistic measures of morphosyntactic function, such as narrative or conversational sampling; however, these future directions were not the result of co-design. Working with clients and their guardians to operationalize functional outcomes that can be probed through repeated measures per PAR could improve the meaningfulness of SCEDs as evidence of improved outcomes for our key stakeholders. Hypothetical examples in the case of Calder et al. (2020) may include self- or caregiver-rating scales on the use of past tense in everyday conversation which could be plotted across time and even analyzed statistically. *Goal Attainment Scaling* (Kiresuk & Sherman, 1968) is another example of collaborative outcome decision-making that is conducive to SCEDs and visually representable. Specifically, Goal Attainment Scaling could be used to define the context in which participants and their families desire to see *change* (e.g., past tense use during school or at home). Related to terminology of *disorder*, low awareness of the condition may result in prioritisation of intervention that targets characteristics of DLD

(e.g., regular past tense marking) rather than the functional impact of the condition (Hobson et al., 2024). Therefore, any support should focus at both the individual and environmental levels to enhance inclusivity and accessibility, evidence of which can be attained through 'Looking' and 'Acting' with stakeholder input.

Regarding clinicians as the intended implementers of TheMEDI, the current manual may serve as a 'generative tool' for co-design (Sanders, 2000) of refined procedures through the 'look-act-think' processes (Koch et al., 2005) of the cycle. This iterative process can be expanded by feeding back and interpreting findings throughout the implementation of preliminary pilot and feasibility trials using SCEDs prior to adequately powered effectiveness trials through RCTs. Critical findings, such as the 'bare minimum' intervention procedures, can then be disseminated and translated appropriately for community stakeholders as the consumers of PAR results through networking platforms including social media, communities of practice, and special interest groups. Open and honest communication through well-considered dissemination strategies serves to maintain and sustain partnerships through PAR (Wallerstein & Duran, 2010) which can be evaluated through feasibility methodologies and clinician surveys.

The Reflection Process

This cycle repeats and is underpinned by ongoing 'Reflection' (Koch et al., 2005). Ultimately, the cycle may change, sensitize, and soften the deficit-focused language of the program from *intervention* to *change process*, and inform different practices to evaluate pre- and post-change following participation in future SCEDs which acknowledge the strategies that have already been successfully used by the client and their guardians who live with DLD. Implementing the PAR cycle with clinicians may lead to new ways of delivering TheMEDI, that are more effective and ultimately efficient by acknowledging what is reasonably replicable in everyday settings. If the collaboration is effective, decisions may be made to share results, perhaps in a range of formats, with communities of practice groups, support groups, speech pathology practices, research institutes, and public institutes such as local schools.

The final section of this paper (Part III) discusses six considerations when combining PAR and SCED as a mixed-method design in clinical practice.

PART III: Discussion about the Use of PARSCED in Clinical Practice

The adoption of an integrated approach such as the PARSCED enriches the framework of evidence and supports the implementation of a wider and deeper approach to evidence-based clinical decision-making, drawing on all pillars of evidence-based practice, including the perspectives and values of clients, and their significant others as well as the clinicians and those who work with them. We believe adoption of the PARSCED within our program of research will lead to more effective, more personalized interventions and supports, allowing those we work with to have an improved communication

ability and an improved quality of life (Hoffmann et al., 2014). In a first step and attempt, we have recently co-developed grammar intervention priorities and protocols for children with Developmental Language Disorder together with Tasmanian speech-language pathologists, enacting the 'Look' aspect of the process (Calder et al., 2025). The results of this early stage in the PARSCED approach have indicated that there is an urgent need to support the implementation of grammar intervention in the Tasmanian context. Foremostly, our community stakeholders reported that there is a disconnect between research and practice. Our community collaborators agreed that training is needed to facilitate the implementation of the intervention approach to move beyond targeting regular past tense to treat grammar difficulties more broadly. We also heard stakeholders express their concerns about achieving the suggested dosage of the intervention within the constraints of service provider models, such as working in schools. Finally, our collaborators spoke to the challenges to identifying which aspects of grammar to focus upon as part of their support to enhance grammar skills of children with whom they work. Therefore, enacting this early 'Look' stage of the PARSCED approach has enabled us to consider how we can reach and support speech pathologists, particularly by considering how training can be informed by implementation of the intervention in school contexts which addresses the functional grammatical needs of children in these settings. Importantly, we are planning to expand the co-development of priorities to guardians and children with DLD to synergise how best to implement a change process that aligns with priorities set by clinician and consumer stakeholders through 'Think' and 'Act' processes, and revisiting through ongoing 'Reflection'. Ultimately, this will inform the design of a SCED that integrates the perspectives of community while addressing barriers identified through the look-think-act cycle. For example, a SCED based on PAR may be designed not only to capture impact on function for the client but may also measure clinician confidence in implementing a change process following training across a range of settings (e.g., at home, in the classroom).

Below, we draw from our recently co-designed grammar intervention priorities with clinicians (Calder et al., 2025). Here, we outline how co-designing, co-evaluating, and co-adapting approaches to the ongoing evaluation of an empirically supported intervention (or *change process*) can be achieved in a way that *embraces community viewpoints and fosters investigation and dissemination in ways that are most meaningful to our intended consumers*. While the *status quo* of research in the field of speech-language communication may urge us to move towards larger scale RCTs to evaluate TheMEDI (our grammatical intervention program), this typical trajectory of programmatic research would encourage us to conceptualize our clients and their families in terms of averages at the expense of 'outliers'. From a clinical practice perspective, these outliers represent the individuals, who

likely require our attention most of all. PARSCED offers the opportunity to embrace the perspectives of outliers through a robust mixed-methods approach that embraced inter-individual differences.

As a result, we offer *six* considerations as a foundation for future research endeavours that may benefit from a PARSCED approach:

1. It may feel threatening for a clinician/researcher to share power with 'non-experts'. It may be perceived as jeopardising our scientific practice by seeking input from clients, relatives, and the broader community. However, this is not what is at stake. Our recommendation is to stay open to a conversation. No doubt it will feel awkward to enter this conversation since a genuine PAR approach requires the researcher to share decision power. This does not mean giving up on evidence-based methodological standards or on clinical expertise. It means to accept 'lived experience' as a further evidence base (e.g., what are the strategies that have already been successfully used by the client or family to live with a language impairment), and the awareness of how to weave in clinical expertise with gentler language and in a collaborative approach. This also means fully embracing the client values and perspectives within a person-centred approach as recommended within the evidence-based frameworks (e.g., Hoffmann et al., 2014).

2. Providing information to stakeholders about a standardized measurement tool and what it hopes to achieve may help allay fears and promote engagement. Truly attempting to hear what clients, clinicians and community partners are saying may lead to new ways of delivering the tool, and different practices pre- and post-treatment. If the collaboration is effective, decisions may be made to share results, perhaps in a range of formats suitable for different audiences (e.g., accessible to community of practice groups, support groups, speech pathology practices, research institutes, and public institutes such as local schools etc.).

3. The PAR group of stakeholders (the *community forum*) needs to include people with the targeted condition and their guardians/carers as well as clinicians who work with that condition, and the researcher(s). Initial members may propose other interested parties whose contribution would be helpful (e.g., teachers from local schools in a paediatric context). None of the stakeholders need to be actively involved in the intervention. The role of such a community forum is to inform and bring their perspective to the table,

but they do not serve as evaluators of the intervention themselves. However, they can offer opinions for example, as to what, other than test scores, needs to be included in the evaluation, and provide useful information on what they think led an intervention to be successful or not. In this context, there may also be room to gather input from clients, who are children, and invite them in actively shaping their treatment materials. They may topic shade the stimuli used, or words they think 'sound' pleasant to them. Any intrinsically motivated word list may show greater engagement into the intervention.

4. Start with the 'Look' process first (listen openly without agenda, be aware of the power you hold when stepping into this iterative cycle). Then move into 'Think' (make a democratic decision) and 'Act' (in agreement with community group). This cycle is repeated, underpinned by ongoing reflection. This cycle will ultimately change, sensitize, and soften medical deficit-focussed language use and will ultimately move towards more inclusive neutral language (e.g., *intervention* might be termed *change process*). This aspect also facilitates how future SCEDs can be designed to address barriers to implementation from the perspective of key stakeholders.

5. As we demonstrated with our own SCED example, it is never too late to complement SCED with PAR. Keep in mind that there are different involvement levels of PAR (e.g., start with PAR in small increments, even though less powerful). The next step for our own example will be to involve the clients, family members, clinicians and teachers in a community forum when running a follow-up study or similar new study. A good way for maintaining involvement with the community group is to include them as co-presenters and co-authors on publications (as suggested by Israel et al., 2012).

6. Similarly, SCED can add to PAR. Even though PAR is the novel focus in this paper, our detailed discussion highlights how important it is to clearly explain the methodological purpose to the community and different stakeholders. Rather than compromising the SCED method, the PAR process is invited to tailor parts of the application of aspects of the intervention evaluated in a SCED (e.g., stimuli, content topics, room of delivery). Making the purpose and language around SCED methodology accessible to stakeholders is key

for a transparent and democratic way of working together. It does not imply altering the scientific methods but rather, adding to it with a lived experience evidence base.

Conclusions

We have proposed ways to demonstrate PAR principles post-hoc in an existing SCED study. Our paper offers a starting point to raise awareness. We anticipate the use of more inclusive and less deficit-based language. This might be observed in the co-design process during the work with different expert stakeholders from the community, who will give individual and collective feedback to the researchers. The more that involvement with PAR is woven into each step of the way, the more this opens doors for incorporating strategies to keep disseminating research findings to all participants in ways that are meaningful to them. While we showcase how a SCED design can be expanded or linked post-hoc to PAR, there is a clear benefit in implementing PAR principles from the start, which will result in a better buy-in from clients, their relatives and community. Valuing different and diverse sources of evidence equally - the scientific and the lived experience evidence, will bring the most satisfactory outcome.

We hope this paper forms a basis for many collaborative conversations across different stakeholder groups, and we would like to conclude with a reflective quote by Pearson et al. (2005):

> The ongoing debate on the nature of evidence for practice across all of the health professions is influenced by the experience of clinicians in everyday practice who, in using the evidence, assert that there are diverse sources of research-based and non-research-based evidence and that the process of evidence-based practice should be placed within a broader context that is grounded in practice; recognizes different evidentiary bases; and is directed towards improving global health across vastly different practice contexts. (p. 207)

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